INFORMATION RETRIEVAL DEVICE AND SERVICE

BACKGROUND OF THE INVENTION

The present invention relates to a method and a device of retrieving information which has been accumulated in databases on a network.

5   As the background art relating to reserved retrieval from accumulated documents, there is a technique in which a list of appropriate documents is acquired on the basis of retrieval conditions and a retrieval time registered in advance, as disclosed in

10 JP-A-7-334522.

On the other hand, JP-A-6-60121 discloses a method in which batch processing is applied to a plurality of retrieval requests issued by a plurality of users.

15   In the above-mentioned background-art technique (1), the result of the retrieval is given as a list of documents, so that the contents of the retrieval are notified by electronic mail. However, the technique (1) says nothing about any process in the

20 case where there are duplicates in the notified contents.

On the other hand, the above-mentioned background-art technique (2) says about a method in which retrieval requests issued by a plurality of users

25 respectively are integrated and a retrieval process is

carried out thereon in order to enhance the efficiency in retrieval, and a method in which the results of the retrieval are expanded to the users respectively. However, no description has been made on a method of

5 how to increase the efficiency in executing the retrieval process from a large unspecified number of databases on the network, or any specific method of how to expand the results to the users respectively.

SUMMARY OF THE INVENTION

10 The present invention provides a retrieval device in a system having computers and databases connected to one another. The retrieval device includes: a retrieval reservation registering portion for registering retrieval requests from users; a

15 retrieval device portion for retrieving information from the databases on the basis of the contents registered in the retrieval reservation registering portion, and delivering results to the users respectively; and a retrieval processing portion for

20 integrating duplicate retrieval requests in accordance with rules defined in advance, and creating data to be delivered to the users when information is retrieved from the databases.

Further, the present invention provides an

25 information retrieval device including: means for executing reserved retrieval under predetermined retrieval conditions and at a predetermined retrieval

time from documents accumulated in a large unspecified
number of databases on a network; means for allowing at
least one user to register individual retrieval
conditions, and maintaining the registered retrieval

5   conditions availably; means for integrating duplicates,
creating retrieval conditions and executing the
retrieval when the duplicates exist in the registered
contents of retrieval conditions among the users; means
for making copies of information about acquired

10 retrieval results correspondingly to the duplicates
among the users so as to meet the registered retrieval
conditions desired by the respective users, and
expanding the retrieval results in accordance with the
registered retrieval conditions made by the users

15 respectively; and means for eliminating duplicates, if
any, from each expanded content, editing the content in
a form desired by each user, and delivering the edited
result to a mail address or a delivery destination
registered by each user. Further, the present

20 invention provides retrieval service using such a
retrieval device.

Other objects, features and advantages of the
invention will become apparent from the following
description of the embodiments of the invention taken

25 in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS
Fig. 1 is a diagram showing a configuration

of a device according to the present invention and the
operation of the device as a whole;

Fig. 2 is a diagram showing an example of a
screen for registration of retrieval reservation in an
embodiment of the present invention;

Fig. 3 is a flow chart of a process of a
retrieval condition integrating portion in an
embodiment of the present invention;

Fig. 4 is a view showing an example of a list
of duplicates in an embodiment of the present
invention;

Fig. 5 is a flow chart of a process of a
previously retrieved result storage and reference
portion in an embodiment of the present invention;

Fig. 6 is a flow chart of a process of a
retrieval result delivery portion in an embodiment of
the present invention;

Fig. 7 is a flow chart of a process of a
user-specific delivery and distribution processing
portion in an embodiment of the present invention;

Fig. 8 is a flow chart of a retrieval result
duplicate integrating process in an embodiment of the
present invention;

Fig. 9 is a diagram for explaining a
structure for integrating duplicate retrieval result
data in an embodiment of the present invention;

Fig. 10 is a view showing examples of
contents of retrieval result data in which duplicates

have been integrated in an embodiment of the present
invention;

Fig. 11 is a view showing an example of a
template for delivery in an embodiment of the present
5   invention; and

Fig. 12 is an example of a delivered
electronic mail using a template for delivery in an
embodiment of the present invention.

DESCRIPTION OF THE EMBODIMENTS

10   Embodiments according to the present
invention will be described below with reference to the
drawings.

Fig. 1 is a diagram for explaining a
configuration of a retrieval device to which the
15   present invention is applied and the operation of
retrieval service. In environment in which a plurality
of database systems (DBMS) 1, 2,… n as subjects to be
retrieved in this system are connected via a network
and allowed to be retrieved, users 1, 2, 3,… n in this
20   system can receive service with which the results of
retrieval carried out in accordance with retrieval
conditions registered in advance by the users 1, 2, 3,…
n are delivered through a medium such as electronic
mail.

25   The configuration of a program or respective
systems for providing retrieval result delivery service
according to the present invention will be described

below.

A retrieval reservation registering portion
(A) 103 and a retrieval reservation registering portion
(B) 104 register reserved retrieval conditions in
5 accordance with user-specific delivery requests 102 set
by the users individually in advance. The number of
such retrieval reservation registering portions may be
equal to the number of the users. As will be described
later, however, the user 1 may reuse the reserved
10 retrieval conditions made by the user 2 as they are.
In this case, retrieval reservation registering
portions may be provided for the two users separately,
or one and the same retrieval reservation registering
portion may be provided for the two users in order to
15 save resources.

An information retrieval portion 105 executes
reserved retrieval in accordance with the contents
registered in the retrieval reservation registering
portions. The information retrieval portion 105 has
20 the following configuration. A retrieval condition
integrating portion 106 checks duplicates among the
retrieval conditions in the respective retrieval
reservation registering portions. If there are
duplicates, the retrieval condition integrating portion
25 106 integrates these duplicates and sends a result to a
retrieval expression creating portion 107.

The retrieval expression creating portion 107
creates retrieval expressions on the basis the given

retrieval conditions. In accordance with the retrieval
expressions created thus, a retrieval executing portion
108 issues commands. A previously retrieved result
storage and reference portion 109 refers to previously
5   retrieved results if a command issued thus needs
reference to the previously retrieved results.
Otherwise, the previously retrieved result storage and
reference portion 109 executes new retrieval. A
retrieval result acquiring portion 110 acquires
10   retrieval results and a retrieval result delivery
portion 111 delivers the retrieval results to result
databases 112 and 113 in the respective retrieval
reservation registering portions.

A user-specific delivery and distribution
15   processing portion 114 distributes the retrieval
results for delivery to the users respectively. If
duplicate results are included in the results to be
delivered to the same user, these duplicate results are
integrated and the integrated results are then
20   delivered to the user (115).

A method for registering retrieval
reservation through a user-specific delivery request
102 will be described with reference to Fig. 2 showing
an example of a screen for a user interface.
25   The reference numeral 201 designates an
example of a screen for retrieval reservation
registration used by a user A. Here, description will
be made only on a basic function. The reference

numeral 202 designates a heading including items for selecting a retrieval category or categories. For example, category items which are very often used as retrieval conditions by the user may be enumerated thus

5 in advance so as to offer a choice to the users. In such a manner, a load imposed on the users can be lightened. In this example, "Internet" and "text retrieval" have been chosen for reserved retrieval. With regard to the other conditions, a column for the

10 user to input a word or words that the user wants to retrieve may be provided under a heading 203 for accepting designation by word or sentence.

Further, in this column, means for correcting words in case of a word remembered vaguely or in case

15 of wrong spelling may be provided as an auxiliary. When the user cannot properly set a keyword which the user desires to retrieve in the items under the heading 202 or the column under the heading 203, or when the user desires to reuse retrieval conditions which were

20 set by some other user, the user can use an item under a heading 204 so as to refer to information of retrieval reservation registration made the other user.

That is, when the user A chooses and refers to retrieval conditions set by users belonging to a

25 user group to which the user A is allowed to make reference, categories or keywords set by the referred users are displayed so that the respective items can be reused.

The user A may use and register such
information as it is, or may edit the information by
addition of new items and by deletion of items. A
delivery destination of the retrieval results is

5 designated in a column under a heading 205. In this
example, the delivery destination is an intra-office
mail address according to default setting.
Alternatively, setting may be made so that the
retrieval results are delivered to a private electronic

10 mail address or transferred to a fax machine. The
reference numeral 206 represents a heading for
designating an option of information freshness. Here,
information freshness means freshness of data to be
retrieved.

15 For example, in the case of reserved
retrieval, retrieval may be executed at a predetermined
time, such as every week or every day, and the results
are registered into a database for full text retrieval.
Thus, access is made to the registered data so as to

20 attain higher speed processing. On this occasion, when
the information freshness option is provided but no
designation is made (default), retrieval is executed
from the registered data to thereby acquire the result.
In some cases, latest data are, however, desired to be

25 retrieved newly.

For such a case, the information freshness
option is provided so that the user can choose how
fresh the information is requested. In this example,

two kinds of choices, that is, a choice for executing retrieval from the retrieval database created within 24 hours, and a choice for newly and separately executing retrieval from original data (a group of database

5 systems to be retrieved on the network) are displayed. Information under the headings 202 to 206 is designated so that retrieval reservation is registered. The information is then stored and managed in the retrieval reservation registering portion (103).

10 Fig. 3 shows a flow chart of a process in the retrieval condition integrating portion 106. It is checked whether there are duplicates in the descriptive contents of the retrieval conditions registered in the respective retrieval reservation registering portions

15 103 and 104 or not (301). If there are duplicates, a list of duplicates (401) is created in accordance with duplicate keywords (302). Then, retrieval conditions integrated by eliminating the duplicates from the retrieval conditions are sent, as retrieval requests,

20 to the retrieval expression creating portion 107 (303). Further, if there are no duplicates in Step 301, the routine of process goes to Step 303 directly.

Fig. 4 shows an example of the list of duplicates (401). In this example, users who have made

25 reserved retrieval registration with the keyword "Internet" are three, that is, the user A, the user B and the user C. As for the retrieval reservation registering portions where these three users have

registered, the user A has registered at the retrieval

reservation registering portion (A), and the users B

and C share the retrieval reservation registering

portion (B) with each other. Further, users who have

5 made reserved retrieval registration with the keyword

"text retrieval" are two, the user A and the user B.

Duplicate keys shown in the list of

duplicates in Fig. 4 are integrated in the retrieval

condition integrating portion 106. That is, although

10 there are three users who have requested retrieval for

"Internet", the retrieval may be executed once.

Further, although there are two users who have

requested retrieval for "text retrieval", the retrieval

may be executed once. After these requests are

15 integrated thus, retrieval expressions are created for

one-time retrieval of "Internet" and "text retrieval"

by the retrieval expression creating portion 107. Each

of the created retrieval expressions is issued as a

command by the retrieval executing portion 108.

20 Although the commands issued thus may be

executed directly, the previously retrieved result

storage and reference portion 109 carries out its

process subsequently in this embodiment. By

integrating duplicate requests for retrieval in such a

25 manner, processing in the retrieval server can made at

a higher speed and with a lightened load imposed

thereon. Methods as disclosed in JP-A-6-60121 may be

employed as the details of the integration method of

the retrieval condition integrating portion 106, the

creation method of the retrieval expression creating

portion 107, and the execution method of the retrieval

executing portion 108.

5   Fig. 5 shows a flow chart of the process in

the previously retrieved result storage and reference

portion 109. Judgment is made as to whether the

freshness option designation in a retrieval request

issued from the retrieval executing portion 108 has

10   been made as new retrieval or not (501). If YES,

retrieval is executed from the database systems to be

retrieved on the network and the retrieval result is

stored as a latest one of the previously retrieved

results (503). If NO in Step 501, that is, if there

15   was no new retrieval designation, retrieval is executed

from the previously retrieved results which have been

stored, that is, from the data corresponding to the

designated freshness option (such as information within

24 hours or information within one week)(502).

20   Incidentally, as a method in which the

previously retrieved result storage and reference

portion 109 executes retrieval from the previously

retrieved results, the following method may be

employed. In this method, as disclosed in JP-A-6-

25   60121, when there are a plurality of databases to be

retrieved, databases to be retrieved are designated,

and retrieval is then executed selectively from the

designated databases.

After the retrieved results are acquired by
the retrieved result acquiring portion 110, the results
are delivered to the result databases in the respective
retrieval reservation registering portions by the

5 retrieval result delivery portion 111.

Fig. 6 shows a flow chart of the process in
the retrieval result delivery portion 111.

In the retrieval result delivery portion 111
shown in Fig. 6, first, the list of duplicates 401 is

10 referred to so as to compare a key of each retrieval
result with duplicate keys. Then, a required number of
copies of the retrieval result are made correspondingly
to the retrieval reservation registration placed on the
list of duplicates (601). The retrieval results copied

15 thus are delivered and registered in the result
databases (112 and 113) of the retrieval reservation
registering portions respectively (602).

Fig. 7 shows a flow chart of the process in
the user-specific delivery and distribution processing

20 portion 114. The retrieval reservation registration
set by the respective users in advance is referred to,
so that the retrieval results desired by the users
respectively are acquired from the result databases of
the retrieval reservation registering portions and the

25 contents are stored (701). On the basis of the
contents, the routine of process goes to a retrieval
result duplicate integrating process (702).

Fig. 8 shows a flow chart of the retrieval

result duplicate integrating process (702). First, it is judged whether duplicate results are included in the contents of retrieval results or not (801). This judgment uses a duplicity judging rule group 802 as

5 judgment criteria.

The duplicity judging rule group is, for example, constituted by a coincidence definition rule 803, a similarity definition rule 804, a same information source definition rule 805, other

10 definition rules 806, and so on. Specifically, the coincidence definition rule gives a definition as follows. If the retrieval results coincide with each other or if the coincidence of the full text retrieval results with each other is larger than 80%, the

15 retrieval results are regarded as coincident.

In addition, the similarity definition rule 804 gives a definition as follows. If the similarity between the summaries of retrieval results obtained when the contents of documents are summarized is not

20 smaller than 80%, the results are regarded as similar documents and accordingly as duplicate. Further, the same information source definition rule gives a definition as follows. Retrieval results are regarded as duplicate if data sources from which the retrieval

25 results were acquired derive from one and the same source (for example, an article into which a newspaper publishing company B translated and introduced a public announcement made by a foreign company A and an article

into which a newspaper publishing company C translated
and introduced the same announcement depict essentially
the same contents).

The other definition rules 806 designate

5 rules which can be defined individually on the
retrieval device side. On the basis of the duplicity
judging rule group 802 described above, it is judged
whether there are duplicate results or not. As a
result of the judgment, when it is concluded that

10 duplicate results are included, the results are
integrated on the basis of a result priority rule
(807).

The result priority rule 808 means a rule for
determining which result is to be distributed to the

15 user by preference and which result is to be deleted as
duplicate data when duplicate results are included. In
the example described above, when it is known in
advance that translation of the newspaper publishing
company B is more accurate in technique than

20 translation of the newspaper publishing company C,
setting is made so that priority is given to the
article carried by the newspaper publishing company B,
while the article carried by the newspaper publishing
company C is deleted from the results as duplicate.

25 Further, for example, the result retrieved
for "Internet" and "text retrieval", the result
retrieved only for "Internet", and the result retrieved
only for "text retrieval" are in inclusion relation and

duplicate to each other.

Accordingly, setting is made as follows.
That is, priority is given to the retrieval result
including both "Internet" and "text retrieval". As a
result, whenever information is the same as the
information selected as the retrieval result including
both "Internet" and "text retrieval", the information
is deleted, from the result retrieved only for
"Internet" and the result retrieved only for "text
retrieval", as duplicate data having the result
acquired already.

The retrieval results remaining after
deletion of the duplicates in the duplicate retrieval
result integrating process 702 are edited and shaped
with reference to a template for delivery (1101), and
delivered to the addresses designated in advance by the
users respectively (703).

Fig. 9 shows collectively the structure of
the retrieval result data duplicate integration
described above. A group of data as retrieval subjects
(retrieval subject DBMS1 and retrieval subject DBMS2)
may be a large unspecified number of original data
connected on the network. Alternatively, the group of
retrieval subject data may be previously retrieved
result databases retrieved and registered in advance as
retrieval subjects. Assume here that data 1 and data 2
were acquired as a result of a retrieval process
performed on the group of retrieval subjects.

In the retrieval process at this time, duplicates have been eliminated and integrated, so that access to the group of retrieval subject data has been minimized. As a result, retrieval efficiency has been improved and a load imposed on the retrieval server has been lightened. Further, when an accounting system is applied to use of the contents, for example, when a fee charged for retrieval from the retrieval subject DBMS1 per time is ¥ XX, 10 times of ¥ XX are usually accounted for retrieval conducted 10 times. On the contrary, according to the system in this embodiment, the number of times of retrieval is minimized so that accounting can be reduced.

In order to avoid illegal use, it is, however, preferable that operation is made under separate agreements between the retrieval subjects DBMSs and the retrieval service side. For example, only a descriptive portion (list of duplicates 401 or the like) regarding the number of copies to be made afterward is shared, and automatic accounting is made in accordance with the number of copies made. In such a manner, it is possible to provide a method in which a load imposed on both the systems is lightened without any obstacle to the accounting system.

Further, the following method may be also adopted. That is, a budget is preset on the user side, and data acquirement either from the retrieval subject DBMS1 or from the retrieval subject DBMS 2 is selected

on the basis of the relation between the accounting and the budget. Retrieval result data 1 and data 2 acquired thus are copied by the required number respectively by the retrieval result delivery portion 111, and

5 registered in the result DB of the retrieval reservation registering portion (A).

In the process in which the registered contents are being delivered and distributed to the users respectively, the retrieval result duplicate

10 integrating process 702 is executed so that duplicate content portions 905 present in the data 1 and the data 2 are integrated by elimination of duplicates. Thus, the integrated data for delivery is delivered to the user as the user-specific result delivery 115.

15 Fig. 10 shows a specific example of the elimination of duplicates.

When reserved retrieval results for the user A are the data 1 and the data 2, in the example of Fig. 10, the article (1) dated on February 10th and carried

20 by the newspaper publishing company A is acquired as the retrieval result including both "Internet" and "text retrieval" in the data 1.

On the other hand, the same article (1) dated on February 10th and carried by the newspaper

25 publishing company A is acquired as the retrieval result including "text retrieval" in the data 2. Accordingly, both retrieval results have the same and duplicate contents. If the retrieval results are

delivered to the user as they are, the delivered
contents become redundant, too difficult for the user
to read, and troublesome.

Thus, data for delivery in which the

5 duplicate content portions 905 are integrated into one
by the retrieval result duplicate integrating process
702 is created. In the example of Fig. 10, only the
retrieval result of the data 1 is used, while the
retrieval result contained in the data 2 and having the

10 same content as that in the retrieval result of the
data 1 is eliminated. The integrated data for delivery
is delivered as user-specific result delivery.

Fig. 11 shows an example of a template 1101
for delivery. This example adopts a format in which

15 keys used for retrieval, retrieval date, table of
contents, retrieval result, number of hits, information
of retrieval result (title, creator, creation date,
URL, summary, comment, and the like) repeated
correspondingly to the number of hits, are placed, and

20 a termination comment is outputted finally.
Incidentally, the retrieval date described here means
the very retrieval date when new retrieval was
executed. However, when the previously retrieved
results already registered were referred to, the

25 retrieval date discloses to the user the date when the
previously retrieved results were retrieved.

The comment in the template of Fig. 11 may be
created on the basis of the retrieval results or the

comparison result of similarity in accordance with the similarity definition rule.

For example, when the comparison result of similarity of 95% has got between an article regarding

5 the Internet carried by a magazine company α and an article regarding the Internet carried by a magazine company β, a comment to report that which articles were compared and which article was omitted may be made in such a manner that "Similarity between the article

10 regarding the Internet carried by the magazine company α and the article regarding the Internet carried by the magazine company β was 95%. In this result report, the article carried by the magazine company α was placed, but the article carried by the magazine company β was

15 omitted." At that time, a template for such sentences may be stored in advance so that the numerical value of similarity, the number of hits for retrieval, the values for a similarity judgment result and a retrieval result regarding a source of information (information

20 about newspaper publishing company, URL, name of scientific society or the like), the title of article or paper, and so on, can be put into the template respectively.

Further, the comment may be made in

25 accordance with the retrieval result for every retrieval expression, or may be made only when the comment is requested, or may be made whenever the retrieval result is transmitted.

Incidentally, as for the omission of the article, which article to place on the result and which article to omit therefrom may be defined in the duplicity judging rule group 802. For example, when

5   the similarity between the article carried by the newspaper publishing company A and the article carried by the newspaper publishing company B is 85%, definition may be made such that "place the article carried by the newspaper publishing company A, but omit

10 the article carried by the newspaper publishing company B." In this case, a comment may be created automatically in accordance with a rule defined in advance.

Further, when there are a plurality of

15 duplicates in the contents of a plurality of articles, priority for placing the articles may be defined in advance. For example, definition is made such that "if there are duplicates among articles carried by the newspaper publishing companies A, B and C, place the

20 article carried by the newspaper publishing company A, but omit the articles carried by the newspaper publishing companies B and C. If there is a duplicate between articles carried by the newspaper publishing companies B and C, place the article carried by the

25 newspaper publishing company B, but omit the article carried by the newspaper publishing company C." Accordingly, which article to place and which article to omit may be defined in advance in the duplicity

judging rule group, so that a comment is formed in accordance with the contents of the duplicity judging rule group.

Incidentally, all the cases described above are examples simply. A template for comment may be prepared separately so that sentences are formed using the template for comment and the duplicity judging rule group 802. Another method may be employed alternatively.

Fig. 12 shows an example of a mail to be delivered by use of the template 1101. A mail 1201 received by the user A is formed as follows. That is, first, "Internet" and "text retrieval" are placed as keys designated by the user A. This is followed by that data retrieved on March 1st, 2001 was used, and the number of hits of retrieval results including both "Internet" and "text retrieval" was 2. Further, this is followed by the information of the two retrieval results. Next, it is placed that the number of hits of retrieval results including "text retrieval" was 1, and this is followed by the information of the retrieval result.

Incidentally, the two pieces of information (1) and (2) which have been hit by the retrieval for "Internet" and "text retrieval" are eliminated from the retrieval result for "text retrieval" because they are duplicate. Further, the information is followed by that the number of hits of retrieval results including

"Internet" was 1,523. As shown in the example, when
the number of hits is so large that the mail receipt
capacity is exceeded, a comment is formed and summaries
are refrained from being outputted. Here, the warning

5 "Because of exceeding mail capacity, please refer to
Storage Area 1 of Retrieval Result DB directly." is
given to avoid redundancy of the electronic mail.

In such a case that the result is so large
that the capacity is exceeded, the information is added

10 to the tail of the mail. Thus, there is made a room to
devise how to enhance legibility on the user side, how
to acquire information quickly, and so on.

As described above, in this embodiment, when
reserved retrieval is executed in accordance with

15 retrieval reservation registration made in advance by
users respectively, duplicate retrieval conditions
among the users are integrated, retrieval expressions
are created and then retrieval is executed.
Accordingly, there can be obtained an effect that

20 processing in the retrieval server, a large unspecified
number of database systems to be retrieved on the
network, and the network to connect the retrieval
server and the database systems, can be executed at a
higher speed and with a lightened load imposed thereon.

25 Further, according to this embodiment, an
information freshness option can be set to execute
reserved retrieval. Thus, the case for executing
retrieval from data registered in advance, and the case

for executing new data retrieval can be processed
distinctly, so that there can be obtained an effect
that processing in the retrieval server and the network
can be executed at a higher speed and with a lightened
5   load imposed thereon.

Incidentally, when a database to be retrieved
adopts an accounting system over data acquirement
therefrom, there is an economic effect that accounting
can be reduced if no particular constraint is imposed.
10 When there are constraints on data use, a usage fee
corresponding to the quantity of data copied and used
may be paid on the basis of the list of duplicates, or
a data use agreement may be made separately.

Further, when the coincidence definition rule
15 803, the similarity definition rule 804, the same
information source definition rule 805 and so on are
used, files high in retrieval hit rate can be extracted
from retrieval results in different DBs, the contents
of the extracted files can be compared on the basis of
20 similarity in their summaries, the result can be edited
in accordance with the result of such comparison, and
the edited result can be transformed into a format
based on the template 1101, or a message in accordance
with the retrieval results and the comparison result of
25 similarity can be created. Thus, efforts for arranging
the retrieval results can be lightened.

As described above, according to the present
invention, when reserved retrieval from documents

accumulated in a large unspecified number of databases on the network is executed, if there are duplicates in the registered contents of retrieval conditions in one user or among more users, the duplicates are integrated

5   so that retrieval is executed under the integrated retrieval conditions. Accordingly, there can be obtained an effect that the efficiency in retrieval processing can be increased.

Further, copies of information regarding the

10 acquired retrieval result are made correspondingly to the number of the duplicates among the users so as to meet the retrieval reservation registration desired by the respective users. When there are duplicates in the expanded contents, these duplicates are eliminated from

15 the expanded contents and the expanded contents are then edited in a format desired by each of the users. Accordingly, there can be obtained an effect that the edited result can be delivered to a delivery destination registered in advance by the user.

20   It should be further understood by those skilled in the art that the foregoing description has been made on embodiments of the invention and that various changes and modifications may be made in the invention without departing from the spirit of the

25 invention and the scope of the appended claims.